Hamilton. (F. H.)

POSTURE IN THE TREATMENT OF INTESTINAL COLIC AND ILEUS; WITH A CONSIDERATION OF THE PATHOLOGY OF "SPASMODIC COLIC:"

BEING THE SUPPLEMENT TO A PAPER READ BEFORE THE NEW YORK ACADEMY OF MEDICINE, MAY 1, 1879;

BY

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May 1, 1879, I read before the New York Academy of Medicine a paper on Posture as a Means of Treatment in Strangulated and Incarcerated Hernia, (subsequently published in THE HOSPITAL GAZETTE for June 9th, 1879); and which paper "was written as prefatory to the consideration of Spasmodic Colic and Ileus;" for the purpose of calling attention to posture as a means of treatment in certain examples of these latter affections.

No opportunity, of which I could conveniently avail myself, has yet been afforded me to complete the reading of the paper before the Academy, and I have therefore thought it best to publish it, in order that those who read the first fasciculus, relating only to posture in hernia, might understand in what manner the facts there stated and the views there expressed might bear upon the treatment of colic and ileus.

Writers have spoken of several varieties of intestinal colic, such as simple spasmodic colic, bilious colic, colic from obstruction, neuralgic colic, inflammatory, rheumatic colic, lead colic, etc. These various forms of colic they have attributed to various causes, among which, as a *direct* cause, "spasm," with or without contiguous paralysis, is made to occupy the most prominent position, and especially in the variety first mentioned.

The precise meaning which these writers attach to the word spasm, in its relation to colic, is not always clearly stated; and often they speak of it only casually, or rather as a suggestion, about which they may entertain some doubt, although they do not actually express a doubt.

Thus Dr. Austin Flint, in his Treatise on the Practice of Medicine, says the pain is of a character "supposed to indicate spasm." It might seem from this mode of stating the cause that the author saw some difficulties in the way of this theory, and that he did not regard it as proven; but when considering the subject of treatment, he assumes a more positive tone, and declares that the "object

of treatment is to relieve spasm as indicated by the cessation of pain. Measures are to be directed to this object without reference to the cause of the attack, or the existence of constipation." We suppose Dr. Flint, to refer in this latter clause to the exciting causes, such as acrid ingesta, etc., the immediate cause being the spasm.

Wood, while offering no explanation of the precise nature and degree of spasm whih may cause intestinal obstruction and colic, says of those rare cases which terminate fatally. "Death probably results from the spasmodic closure of the bowel, operating as an obstacle to the passage of the intestinal contents. It is probable that the great distention of the bowel, above the contracted portion, may in some measure paralyze the muscular coat, and thus act as an additional cause of constipation."

This language permits us to infer, I think, not only that spasm may in his opinion, so completely close the intestinal tube as to cause death by complete obstruction, but that in a similar way, that is by spasm resulting in complete occlusion, what he terms "simple, spasmodic colic," not ending in death, may be caused. Indeed what else can be meant by a colic giving rise to obstinate constipation, and caused by a spasm; except that the circular fibres of the intestinal tube contract upon themselves until no orifice remains through which air can pass from one portion of the gut to the other? If, however, writers have generally used the term spasm as indicating only a *moderate* constriction at certain points of the intestinal tube, or as only an increased peristaltic action, it is not clear how either of these conditions could cause obstinate constipation or lock up the gas and other contents in circumscribed portions of the canal. Certainly it would have been better if they had given some clearer idea of what they mean when they speak of spasm as causing colic; and if we have misunderstood them it is because their language is indefinite, and we are left to an inferential construction. We infer that they mean complete spasmodic occlusion because they do not say to the contrary, and nothing short of this could produce the results frequently observed in this class of cases. In fact I am now reminded that Wood speaks even more positively as to the relations of the constipation to the spasm, when he says of simple spasmodic colic "constipation is the result and not the cause of the spasm," p. 651. We are therefore not left in doubt as to his opinion at least.

Gross speaks of intestinal obstruction due to spasm.

Says Erichsen, speaking of intestinal obstruction, "It is of much importance to bear in mind that severe and even fatal intestinal obstruction may occur simply from spasmodic colic."

In Ziemssen's Cyclopædia of the Practice of Medicine, "spasm of the bowel" and paresis of contiguous portions, are mentioned as giving rise sometimes to the phenomena of colic, but no allusion is made to the degree of spasm which may occur, nor to spasm as causing complete occlusion of the intestinal canal.

But, speaking of "ileus spasmodicus, which term I understand to mean, essentially, the same thing as "colica spasmodica," and to embrace the same pathologico-anatomical conditions," Leichtenstern says, "The idea of an ileus spasmodicus, like an icterus spasmodicus lasted longest, even to the middle of the present century. To-day the question of the existence of such an affection no longer calls for serious discussion."

This statement of Leichtenstern seems to me to imply that among the advanced medical scholars of the last half century, the idea that spasm can completely occlude the intestinal canal so as to obstruct the passage of gas, and in some cases to cause death (in which cases of persistent and fatal spasm, alone, would it be termed ileus perhaps), is abandoned. But my knowledge of the literature of this subject is too limited to allow me to say that this is the real conclusion of our best pathologists and medical scholars. But if this idea of ileus spasmodicus is aban doned, it saves me much labor, or at least renders it more easy to secure attention to my own, and what I suppose to be novel, views, as to the immediate cause of the phenomena in many cases of so-called spasmodic colic and spasmodic ileus. Certainly if spasm is to be rejected as being an insufficient explanation, wə must now find some other which is sufficient, and I am not aware that this has been done.

It must be understood that I am not seeking for the remote causes. These have been studied with diligence, so far at least as relates to some of the forms of colic, including all the forms of purely neuralgic colic, lead colic, &c., by Romberg, Kussmaul. Maier, and others, who have traced the remote causes to certain changes in the sympathetic ganglia, or to certain influences operating mainly upon the sympathetic system; or, in the case of acrid and irritating ingesta, the causes of spasmodic colic have been ascribed to reflex actions, inducing pain, partial spasm and partial paralysis, increased and diminished peristaltic action in different portions of the intestinal tube.

What we are now inquiring about is, how to explain the sudden, complete obstruction of the intestinal tube in certain cases of colic accompanied with acute pain; and its equally sudden relief, followed soon by a recurrence of the same phenomena; when these phenomena are evidently not due to impacted fæces or to other palpable causes, and which phenomena have usually been designated as spasmodic colic. We are searching for the immediate cause of the obstruction, in these cases.

Lest I should have misunderstood the views of Leichtenstern, and lest the opinion may not have been abandoned that these Phenomena are due to spasm alone, permit me to give my own reasons briefly for supposing that are not so caused.

I cannot think that spasmodic occlusion of any portion of the intestinal tube is possible, except at its two extremities, the pylorus and anus, and possibly at the ileo-cæcal valve, and at the junction of the ileum with the rectum.

The circular unstriped muscular fibres are nowhere else sufficiently aggregated to render it probable that they could do anything more than to cause a very slight narrowing of the canal; and they nowhere encircle the intestine entirely with continuous filaments. Their function is, in connection with the longitudinal fibres, to cause a slight peristaltic action, under the influence of which long-continued, or frequently-repeated, the contents are gradually moved forwards, or in some cases backwards (antiperistalsis). They have never been employed like the sphincter ani, or the constrictor vesicæ, to obliterate the channel; they were not needed for such a purpose, and there is therefore no anatomical provision for its possible occurrence.

Nor does any one pretend, so far as I know, ever to have seen such an occurrence, either before or after death. Yet opportunities have not been wanting

before death in cases in which portions of the intestines have been exposed to view during the progress of surgical operations, or in consequence of surgical accidents which have removed large portions of the abdominal walls; and in these latter cases the conditions are the most favorable possible for the production of spasm, namely, the presence of nervous shock consequent upon the injury, and the exposure to air and other irritants. After death, in man and other animals, the peristaltic action is often, for a time, greatly increased, yet no one has observed the phenomenon in question, and which Dr. Wood supposed to exist when death was caused by spasmodic colic. Intestinal strictures have been found, but no one has pretended to have seen a spasmodic stricture of the intestine either before or after death. In a few experiments which I have made upon the intestines of animals just killed, nospasmodic occlusion has been obtained under the influence of irritants, which was sufficient to prevent the passage of gas.

THE WRITER'S THEORY.

The explanation of the phenomenon in question which I offer is, that in consequence of an unusual accumulation of gas in the intestinal tube certain portions are expanded and elongated, until, under the counter pressure of the abdominal parietes, insufficient room is left for their normal repose and relative adjustment, and they become at certain points doubled upon themselves and possibly upon each other, and the sharp angular reflexions interrupt or actually occlude the passage.

The great length of the mesentery permits in a healthy state of the bowels a gre. at latitude of motion to the small intestines ; and in consequence of the peristaltic action, and of changes in the form, volume and position of the abdominal cavity, these changes and actual transpositions or dislocations of the small intestines are constantly occurr ing; but when inflated with gas, and especially if at the same time the peristaltic action is increased by acrid ingesta, so that the natural movements of the intestinal tube are greatly exaggerated, their ready adjustment to each other is rendered difficult, and a doubling upon themselves, and sometimes, perhaps upon each other, or even a slight twisting, would seem to be rendered probable, if not inevitable.

It is not improbable that this doubling of the intestinal tube is rendered more likely to happen on account of a certain amount of narrowing of the tube from spasm, and its actual dilatation in the portion of intestine immediately above; or that the presence of a small amount of hardened fæces may favor the doubling.

One ground, and possibly the chief ground for the supposition so generally entertained heretofore, that intestinal colic is in most cases due to spasm, causing an occlusion of the channel, has probably been that, if it did actually exist to the extent of causing complete occlusion, it would satisfactorily explain the symptoms usually present. In reply to this very specious argument, it might be sufficient to show that the supposition was impossible; but, admitting its possibility, the theory which I have offered explains these phenomena equally well, and perhaps better than the theory of occlusion from spasm.

1*st. As to the obstruction.*—The doubling, slight twisting, or entanglement of the intestinal tube is equally competent to cause an obstruction at some point as a spasm.

2*d. The pain.*—The pain is probably occasioned by the pressure of gas and other contents against the distended gut ; and possibly it is increased in some cases by exalted sensibility at the seat of obstruction. Indeed, the pain must always be less or greater in proportion to the healthy or morbid sensibility of the parts involved.

3*d. The paroxysmal character of the pain*, under the theory which I have adopted, finds a ready explanation in the peristaltic action of the intestinal tube. In a normal condition peristalsis is known to be alternating, or paroxysmal, with intervals of complete rest. Under the excitement caused by ir ritating ingesta, the peristaltic action is still paroxysmal, but more urgent or violent, and is, in itself, probably the direct source of those pains which, in an ordinary attack of colic, come and go at somewhat irregular intervals.

Whatever other symptoms may be present in intestinal colic, are as readily explained by the theory of doubling, twisting or entanglement as by the theory of spasm.

4. *Evidence drawn from therapeutics.*—Dr. Flint says "the morbid condition in colic is supposed to be spasm. Its seat is therefore the muscular tissue of the small or large intestines. That this is the pathological character of the affection, is shown by the kind of pain, the constipation, together with the other local symptoms, and the therapeutical measures which are found to be successful." The author proceeds to insist upon the importance of subduing the spasm, especially by the use of opiates—since "so long as the spasm continues, there is a resistance to the action of cathartics."

I do not think, admitting that Dr. Flint's therapeutics are correct, that the inference which he makes, namely, that the opium and other similar remedies which are successfully employed by him, prove that the true pathology of the affection is a spasm, is logical; or to say the least, I do not think this conclusion is inevitable. Since it may be that the opium merely allays the acute pains by diminishing the nervous sensibility, or arresting or diminishing the peristaltic paroxysms, and permitting the patient to have a few hours of rest, until the intestines have time and a better opportunity to gradually unfold and adjust themselves.

But opium and morphine do not always cure a "spasmodic colic." Indeed, my later experience has been that intestinal colic is most quickly and most permanently cured by a full dose of some aromatic and stimulating cathartic, such as the tincture of rhubarb with ginger. There are cases, however, in which only a full dose of some active sedative will succeed.

I do not pretend to know how remedies of either class effect their good results—possibly the stimulating cathartics act by increasing still more the peristaltic action—but more probably by causing at first an inverted, or anti-peristaltic action, which inverted action frequently occurs for reasons which physiology explains, even in the normal condition of the intestine.

My only purpose in alluding to the matter of therapeutics, is to illustrate how little they can be relied upon as a means of determining the pathology of the disease now under consideration, or perhaps of any other disease.

I do propose, however, to refer presently to my own brief experience as to the effect of posture in these cases, and to apply this experience in illustration of the soundness of my theory; for the reason that it is the application of a purely *mechanical* treatment for the relief of a mechanical, not strictly physiological or pathological cause or condition. The laws of mechanics are better known than the laws of therapeutics, and can be more safely applied in the solution of a question of this sort.

A young man was suffering from a severe attack of intestinal colic, which, after some hours, I was able to relieve by medication. On the following day he sent for me again, the colic having returned with about the same severity as before. It was probably two hours before I saw him, and then he was perfectly relieved. He at once explained that his friend, a young man at whose house he was a guest, had told him that he had often relieved himself of a colic by elevating his hips with pillows, or over the end of a sofa. My patient made the experiment, and immediately began to discharge gas from the rectum with the effect of prompt and complete relief of the colic.

More recently, in a similar case, I resorted to the same treatment in a case of severe colic, with a like result.

A mother of several children informs me that she has often noticed that, when her infants have been crying with colic, she has raised them by the feet, as if in the act of applying a diaper, and the change of position was followed by an escape of gas, and some times by a free fæcal evacuation, after which the child was relieved.

These are all the facts of experience which I have to relate, but these seem to admit of no other explanation than the one I have given; and it was in fact from these few ob servations that I was led at first to question the correctness of the generally accepted theory, and to substitute my own. The argument, however, seems to me to rest upon a much more substantial basis than these facts, namely: —The theory of spasm being rejected as impossible, the theory of displace ment furnishes the only remaining rational explantion.

I will add just here, although somewhat out of place, what Niemeyer says at p. 591:—"We may often clearly perceive that the gas is driven forwards against the fæces, or some other obstruction, and there arrived, excites the most severe pain."

To my mind the supposition that a doubling of the gut has caused this, in at least a majority of cases, rather than a fæcal ob struction, is by far the most reasonable. This phenomenon occurs quite as often when the contents of the gut are fluid as when they are solid. It occurs (without pain, however,) often when the patient is in perfect health. Gas can be felt confined in limited portions of the gut, forming phantom tumors, and which suddenly disappear. If one will listen with the ear against the abdomen, a similar phenomenon can often be detected, unaccompanied with pain, because there is no exalted sensibility, no spasm, and no violent peristaltic action.

In the cadaver I have often also witnessed this very doubling of which I speak. In attempts to inflate the intestine they have often become doubled upon themselves, and suddenly and completely arrested the passage of air, and this could only be overcome by pulling the intestines out, or by disturbing them in some way.

ILEUS.

I have refrained from any allusion thus far to the fact that there is a well known condition of the intestinal tube called ileus, in which the existence of displace ment is recognized as the anatomico-pathological condition, or more properly as the immediate cause. This displacement, consisting in most cases of a twisting of the tube, or of a convolution upon other portions ; but a reflexion or doubling upon itself is not enumerated among the possible causes. The condition is at- tended with obstinate constipation, great pain and usually results in death. Ileus may occur at any age and almost in any portion of the alimentary canal.

It would seem to be a legitimate conclusion from the present argument, that ileus was in certain cases essentially the same as what has been called "simple spasmodic colic," both being caused by mechanical obstructions arising from displacements and malpositions of the intestinal tube. The essential points of difference probably being that in colic there is simply a doubling of the gut, which is soon rectified by the natural actions of the intestines, or by the aid of medicines, while in ileus the twisting or entanglement being a form of displacement less easily rectified, is apt to con tinue to a fatal issue. It is even probable or possible that some cases called "spasmodic colic," and which have terminated favorably, were in fact slight cases of ileus, but in which cases the twisting was spontaneously rectified and a cure thus effected. We might therefore add to the doubling of the intestine as a cause of colic, the possible occurrence of a mere twisting of the gut—an incipient ileus: and it is not impossible on the other hand that there may be cases which are termed ileus, and which have terminated fatally, in which the sole cause of obstruction was a doubling of the intestine, and not a twisting or entanglement of the intestine.

What I have further to say upon this subject of posture in its application to other accidents than hernia and colic, is wholly inferential. If elevating the lower portion of the body, so as to cause the heavy organs, such as the liver and spleen, to fall toward the head, dragging the intestinal viscera after them, can reduce a hernia or relieve a colic, it is reasonable to suppose that it might occasionally overcome an ileus or disengage an intussusception.

It is hardly necessary to say that the writer has no thought that the mechanical effects of posture will cure all, nor perhaps many of either of the maladies referred to; nor indeed that it shall be a substitute for any other suitable mode of treatment; but only that it be made to supplement other means, in the rational hope that it may sometimes prove effectual, or at least useful.

NOTE.—I wish to express my thanks to Dr. W. R. Birdsall of this city, for several of the references to German writers made in this paper, and to say that at my request he proposes to pursue the study of this subject experimentally.

It is also necessary for me to add that so far as the application of posture to the treatmeat of Hernia and Ileus is concerned there is nothing original in my observations, although the philosophy of the method which I have given, is probably new; and that in its application to spasmodic colic, both the method and the explanation are believed to be new. My attention has been called to the fact that some one has written very recently on the value of posture in the treatment of colic; but I have not seen the paper, nor do I know the name of the author, nor am I informed that the paper was published before the publication of my paper on Hernia, in which the views now expressed were foreshadowed. Of course this is a matter of no consequence to me or to the world, but I did not wish to be suspected of appropriating the suggestions of others, and of offering them as original with me.
